Basic Equations

Basic Equations

I = Interference in at the input of the Victim receiver in dBm

I_{DRE} = DRE interference in at the input of the Victim receiver in dBm

EIRP_s = Equivalent Isotropically Radiated Power from the Interference Source in the direction of the Victim receiver in dBm

EIRP_{DRE} = Equivalent Isotropically Radiated Power from any DRE in the direction of the Victim receiver in dBm

PL_{SV} = Path Loss from the Source to the Victim receiver in dB

 PL_{DREV} = Path Loss from the DRE to the Victim receiver in dB

G_{VS} = Gain of the Victim receiver antenna towards the Interference Source in dB

 G_{DREV} = Gain of the Victim receiver antenna towards the DRE in dB

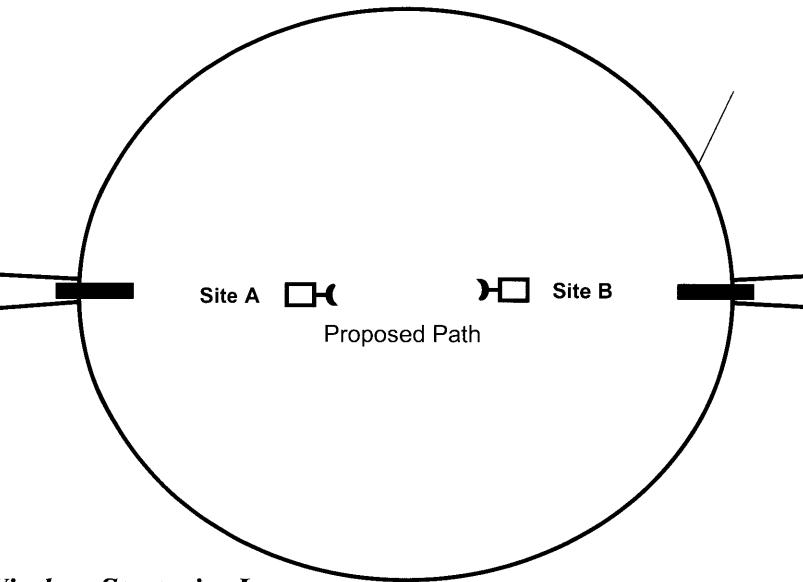
 LL_V = Line Loss at Victim receiver in dB

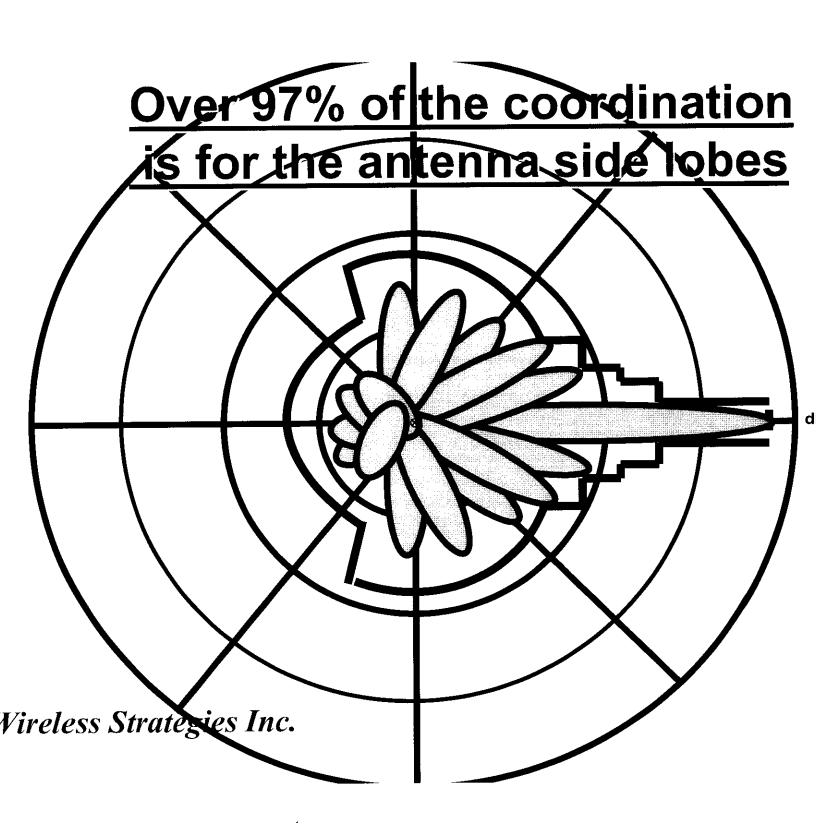
 V_{TN} = Victim receiver thermal noise

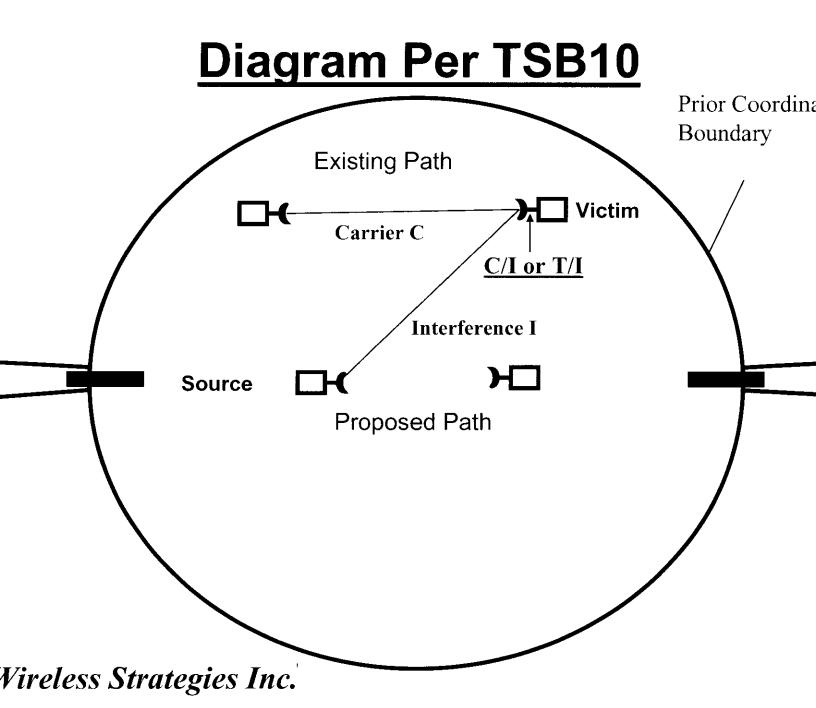
Rule 101.103/TSB10

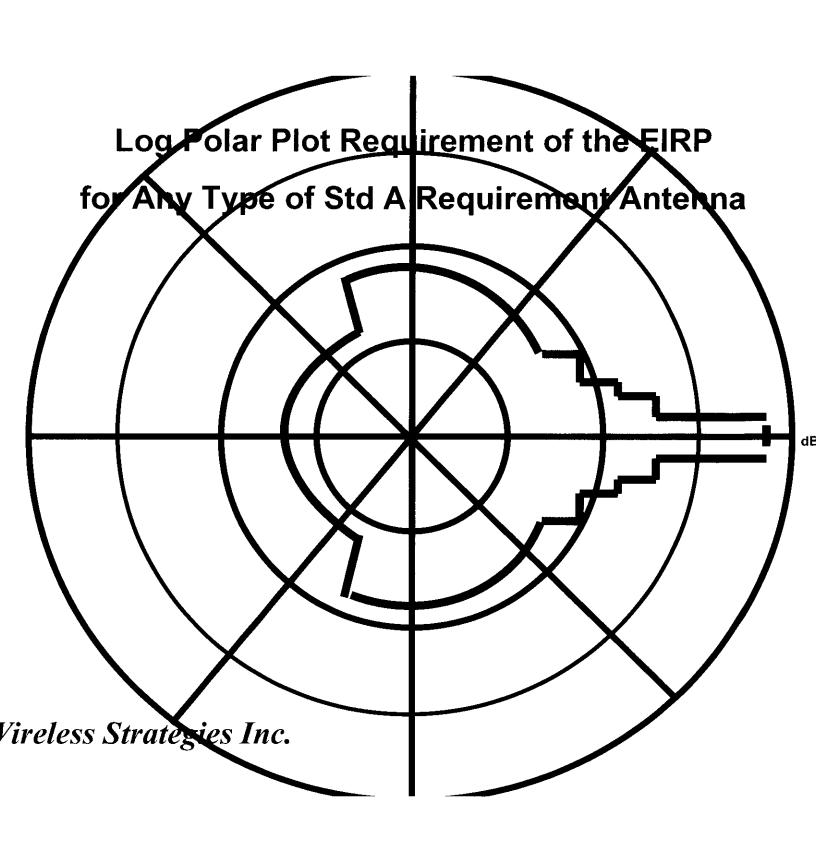
- Coordination for terrestrial microwave systems uses a circular coordination contour with a radius¹ sector extending 400km² within 5 degrees on either side of the antenna main beam and a radius of 200km² for the remaining 350 degrees.
- This means that the antenna side lobes are coordinated at the same time (concurrently) with the main lobe
- This also means that over 97% of the coordination is for the antenna side lobes
- For legacy paths the side lobes are unused, resulting in the inefficient use of exclusive-use spectrum
 - 1. These radii are referred to as the circular coordination distance.
 - 2. For freq above 15GHz, 140km and 75km respectively

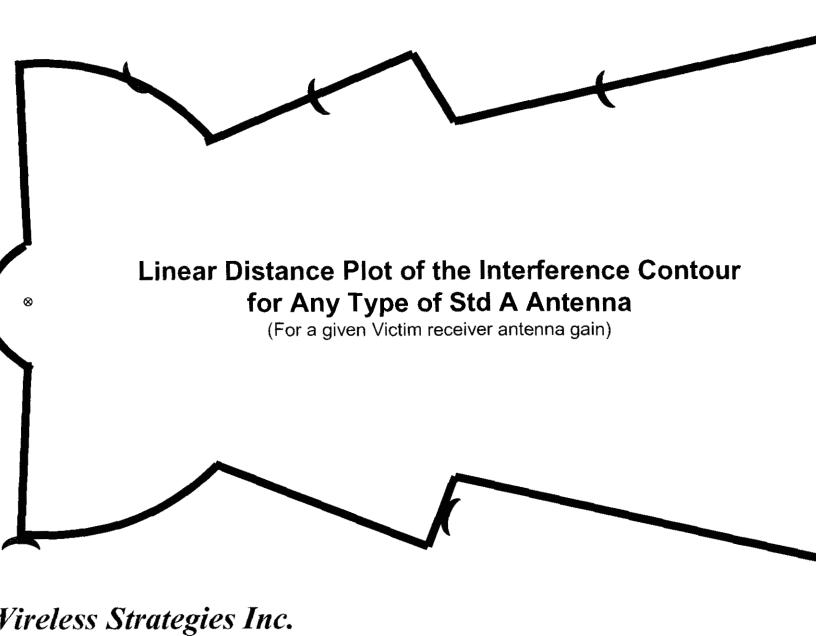
Prior Coordination Boundary

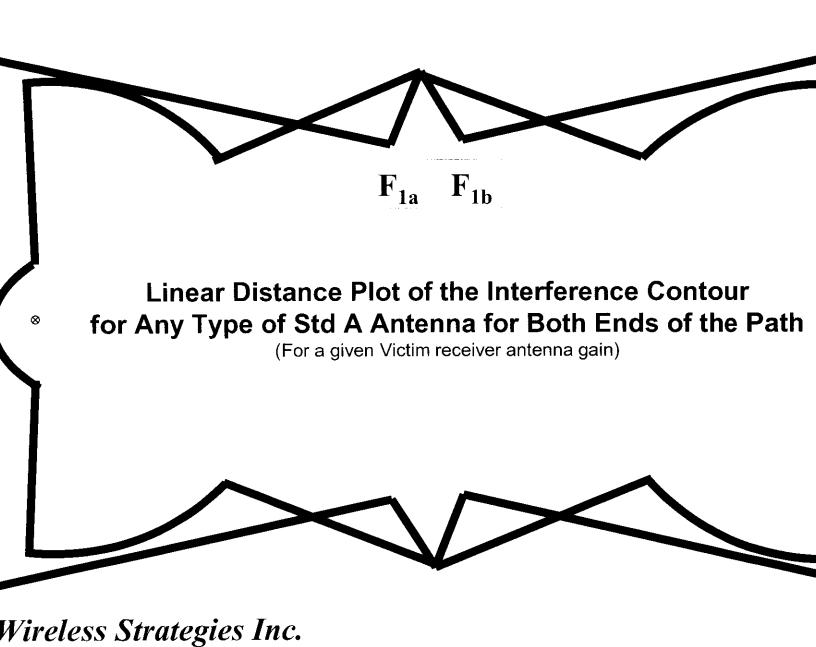


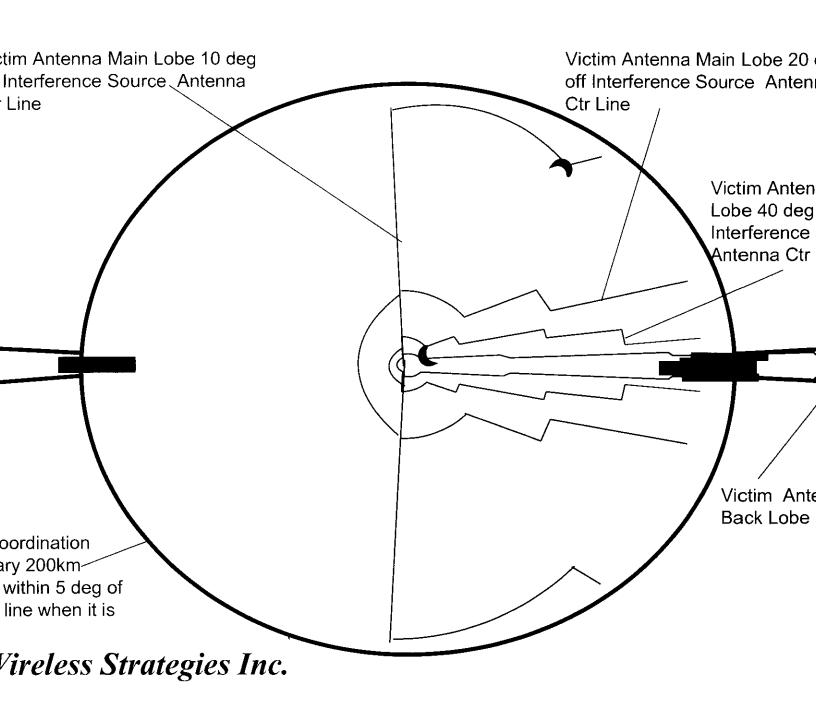












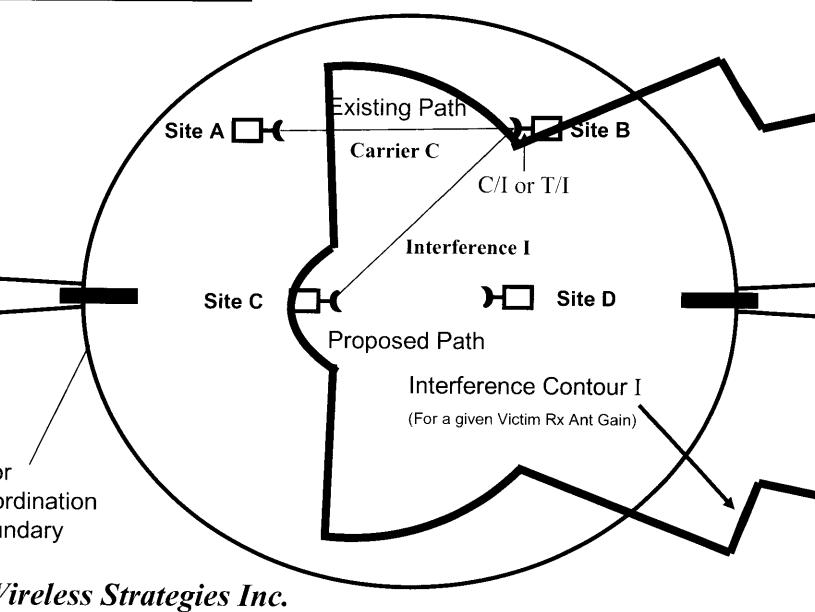
Legacy Network

Everything Required

to perform a

Coordination Study is known

d A Parabolic Dish



Concurrently Coordinated Network

Everything Required

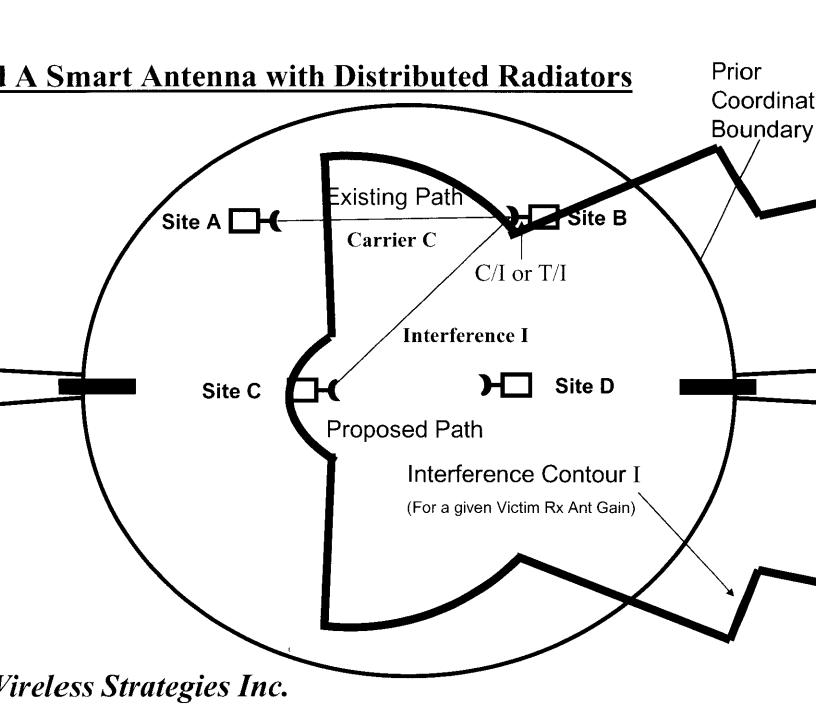
to perform a

Coordination Study

and to

Maintain Idre < I

is known



Smart Antenna with Distributed Radiators*

IDRE < I

I_{DRE} < Victim Rx Thermal Noise - 6dB

Therefore a DRE can NOT cause harmful Interference

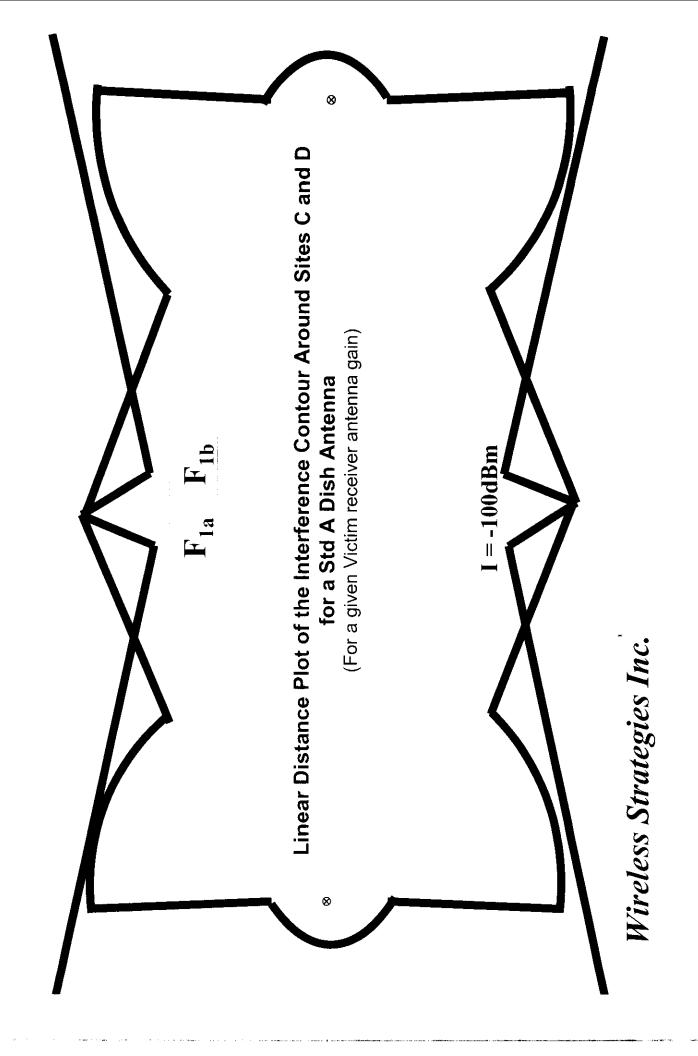
* For a TDD system only I or IDRE is on at any one time.

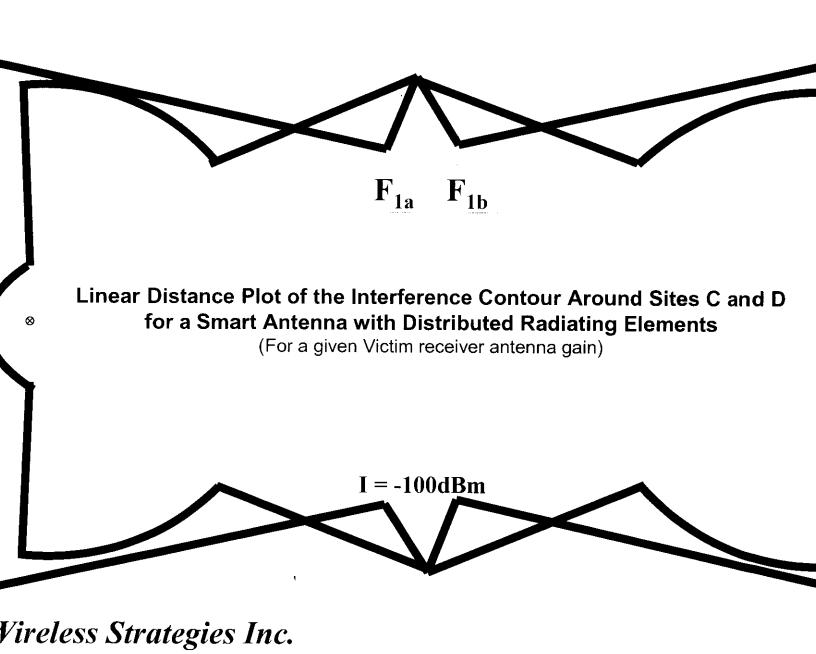
Network Comparison

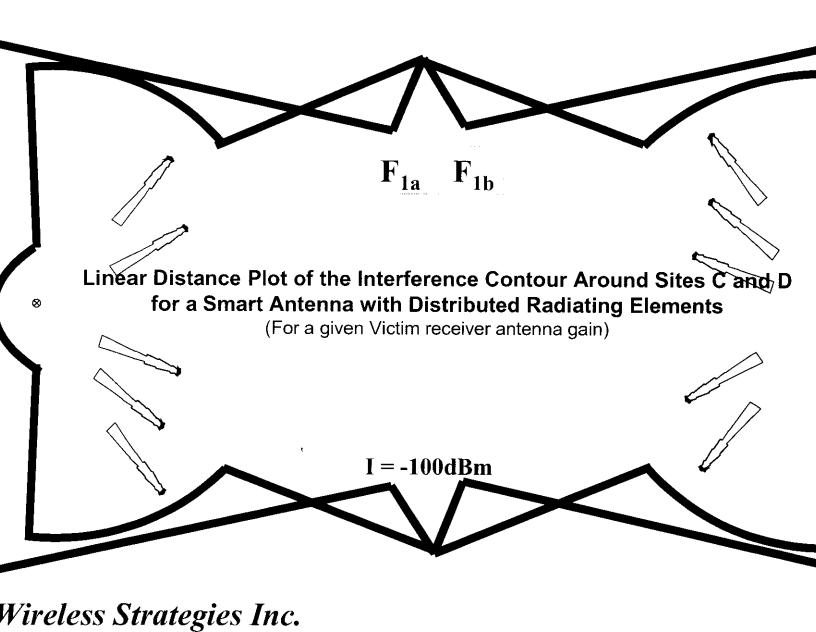
Std A Parabolic Dish Antenna

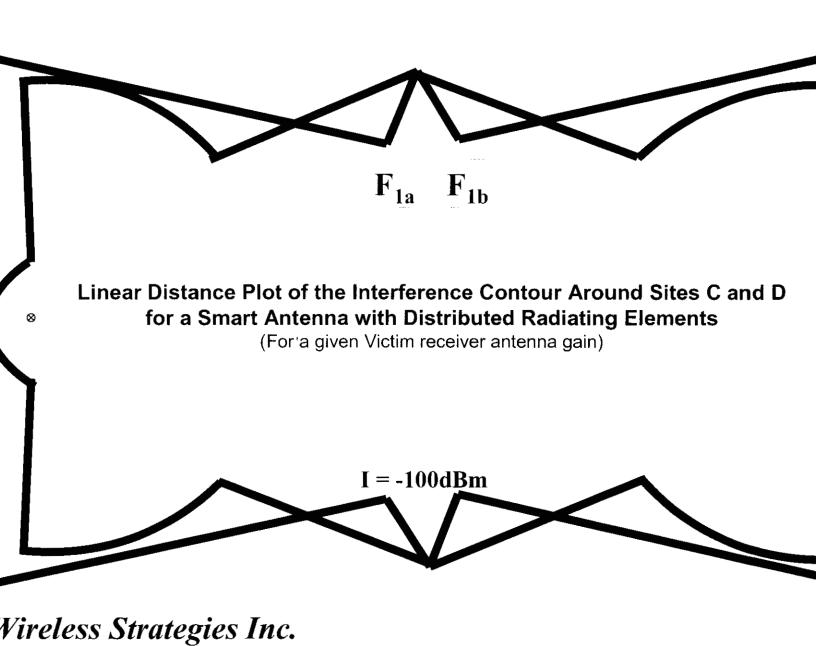
and

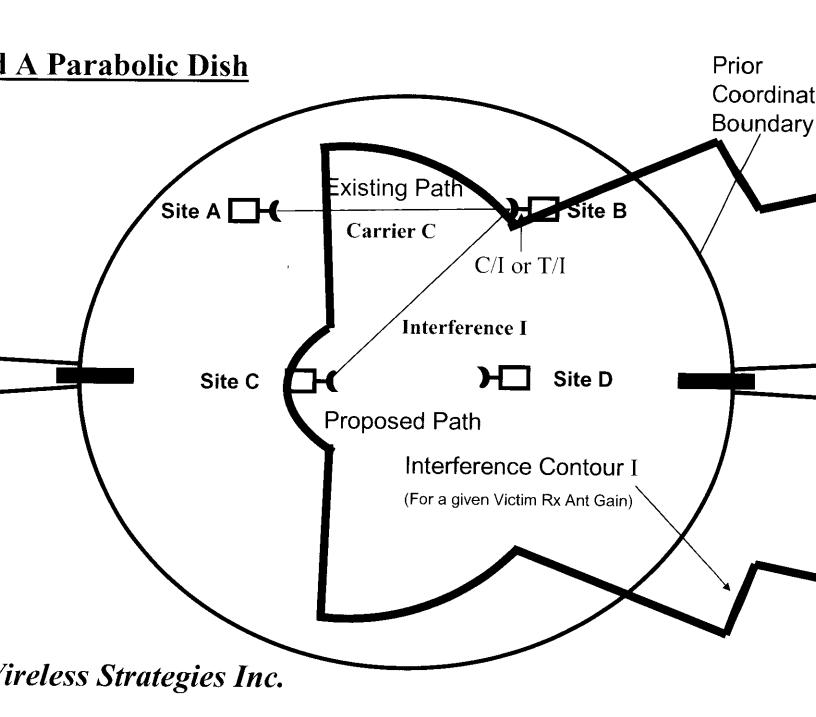
Std A Smart Antenna with Distributed Radiators

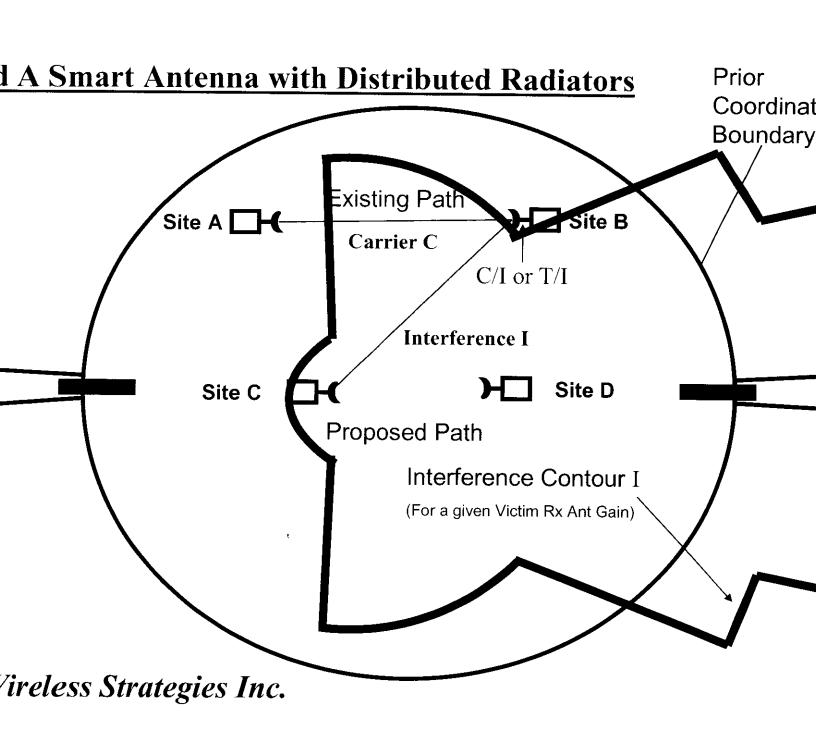












Regulations and Procedures

- · All FCC regulations and procedures are in place.
- A licensee must comply with all regulations and follow all required procedures.
- New license applicants have all the information necessary to conduct a prior coordination.
- The Smart Antenna's database can be maintained by the licensee or out-sourced to a coordination representative.

Need and Necessity

Wireless Operator's View

"A wireless operator without enough spectrum is like a body without enough blood... If you don't have enough blood you're going to face major medical challenges. Likewise, Wireless operators will need more spectrum to be able to offer new services and applications."

-Ali Tabassi, Vice President Innovative Technologies, Sprint-Nextel